felicity which Divine Providence in its wisdom may deign to shower down on Your Royal and Sacred Head—is the most ardent wish and fervent prayer of the President, Council, and Fellows of the Royal Society, in unison with all your other loyal subjects."

The following papers were then read, viz.

"On the structure of the teeth, the vascularity of those organs, and their relation to bone." By John Tomes, Esq. Communicated by Thomas Bell, Esq., F.R.S., Professor of Zoology in King's College, London.

The microscopical examinations which the author has made of the structure of the teeth of man and various animals, lead him to the conclusion that their bony portions are formed of minute tubes, disposed in a radiated arrangement, in lines proceeding everywhere perpendicularly from the inner surface of the cavity containing the pulp. These tubuli are surrounded by a transparent material, which cements them together into a solid and dense mass. He finds, by applying the test of muriatic acid, that carbonate as well as phosphate of lime enters into their composition. In man, the tubuli, during their divergence from their origin at the surface of the central cavity, send off a number of very minute fibrils; and on approaching the enamel or the granular substance, which cover respectively the crown and the fangs of the tooth, the tubuli divide into smaller ones, which freely anastomose with one another, and then either are continued into the enamel, or terminate at the boundary between these two substances. Various modifications of this structure, exhibited in the teeth of different animals, in the class Mammalia and Fishes more particularly, are minutely described. The granular substance appears to be composed of irregularly shaped osseous granules, imbedded in the same kind of transparent medium which cements the tubuli together. External to the granular portion, the author finds another substance entering into the formation of the simple tooth, and commencing where the enamel terminates; and which he describes as beginning by a thin and transparent layer containing only a few dark fibres, which pass directly outwards; but assuming, as it proceeds towards the apex of the fang, greater thickness and opacity, and being traversed by vessels.

External to the enamel, and in close connexion with it, in compound teeth, is situated the crusta petrosa, a substance very similar to the bony layer of the simple tooth. It contains numerous corpuscles, and is traversed by numerous vessels entering it from without, and anastomosing freely with one another, but terminating in its substance. These investigations of the structure of the different component parts of teeth, furnish abundant evidence of their vascularity and consequent vitality.

"On the evolution of Nitrogen during the growth of plants, and the sources from whence they derive that element." By Robert Rigg Esq. Communicated by the Rev. J. B. Reade, M.A., F.R.S., &c.

In this communication the author follows up his inquiry into the